## at1121exam_practice EXAMPLE! DO NOT HAND IN FOR CREDIT (v18)

- If you are looking for a practice exam that you can hand in for credit:

https://chadworley.github.io/algtwo2026/u04/1121/at1121exam/at1121exam.html

### Question 1

Simplify the radical expressions.

$\sqrt{18}$ $\sqrt{28}$ $\sqrt{99}$

$\sqrt{3 \cdot 3 \cdot 2}$ $\sqrt{2 \cdot 2 \cdot 7}$ $\sqrt{3 \cdot 3 \cdot 11}$

$3\sqrt{2}$ $2\sqrt{7}$ $3\sqrt{11}$

### Question 2

Find all solutions to the equation below:

$$\frac{(x+6)^2+6}{7} = 10$$

First, multiply both sides by 7.

$$(x+6)^2+6 = 70$$

Then, subtract 6 from both sides.

$$(x+6)^2 = 64$$

Undo the squaring. Remember the plus-minus symbol.

$$x+6 = \pm 8$$

Subtract 6 from both sides.

$$x = -6 \pm 8$$

So the two solutions are $x = 2$ and $x = -14$.

**Question 3**

By completing the square, find both solutions to the given equation. *You must show work for full credit!*

$$x^2 - 10x = -16$$

Take the linear coefficient, -10, halve it and square the result. You should get 25. Add this to both sides of the equation to complete the square.

$$x^2 - 10x + 25 = -16 + 25$$

$$x^2 - 10x + 25 = 9$$

Factor the perfect-square trinomial.

$$(x - 5)^2 = 9$$

$$x - 5 = \pm 3$$

$$x = 5 \pm 3$$

$$x = 8 \quad \text{or} \quad x = 2$$

**Question 4**

A quadratic polynomial function is shown below in standard form.

$$y = 2x^2 - 28x + 93$$

Express the function in **vertex form** and identify the **location** of the vertex.

From the first two terms, factor out 2 .

$$y = 2(x^2 - 14x) + 93$$

We want a perfect square. Halve -14 and square the result to get 49 . Add and subtract that value inside the parentheses.

$$y = 2(x^2 - 14x + 49 - 49) + 93$$

Factor the perfect-square trinomial.

$$y = 2((x - 7)^2 - 49) + 93$$

Distribute the 2.

$$y = 2(x - 7)^2 - 98 + 93$$

Combine the constants to get **vertex form**:

$$y = 2(x - 7)^2 - 5$$

The vertex is at point $(7, -5)$.